

died their own. It is interesting to notice that, if a skein of wool be suspended in a small experimental vat in good working order, it is the upper part of the skein nearest the surface which takes the deepest colour, and next to it, as one would have imagined, the lower part nearest the sediment at the bottom. This blue scum was the probable source, not only of the woad blue which Pliny speaks of as being used in his time to stain chalk with for the adulteration of indigo, but also of the "ancient Briton" pigment, of which we hear so much and know so little. Cæsar and Pomponius Mela speak of our ancestors staining their bodies blue; it is difficult to understand how they could dye their skin blue, but it is easy to see how they could have smeared themselves with woad-blue mixed with oil or grease. Herodian, however, throws a little more light on the subject when he tells us that "they mark their bodies with various figures of all kinds of animals, which is the reason they wear no clothes, for fear of hiding these figures." The use of indigo for tattooing is still common among our soldiers and sailors.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

DR. J. T. JENKINS has been appointed lecturer in biology and geology at the Hartley College, Southampton, and Mr. J. D. Coates assistant lecturer in physics and electrical engineering.

MISS ELEANOR ORMEROD, the well-known authority on agricultural entomology, lately deceased, bequeathed the sum of 5000*l.* to the University of Edinburgh. Miss Ormerod was an examiner in entomology for the University, and received from them last year the degree of LL.D.

THE councils of English Counties and County Boroughs expend upon scholarships a large amount of the money available for technical education. A report upon the scholarship schemes adopted by local authorities appears in the *Record of Technical and Secondary Education*, and it shows what is being done to provide continuous and systematic courses of training for promising students. It appears from this report that, taking County and County Borough Councils together, there are now 93 out of 110 such local authorities who provide scholarships in one form or another. The total number and value of the scholarships and exhibitions in force (*i.e.* those awarded and those continued and renewed from previous years) under the schemes of 90 of those 93 authorities during the year 1899-1900 were 19,971 and 156,793*l.* respectively. The scholarships are tenable at institutions of various ranks, and the number and value of those awarded annually in each class are as follows:—(1) At evening classes, 6766 (7862*l.*); (2) at technical and science and art schools, 3426 (17,064*l.*); (3) at secondary schools, 5593 (77,349*l.*); (4) at higher institutions and Universities, 679 (27,097*l.*); (5) at agricultural and horticultural schools, &c., 532 (9866*l.*); (6) at domestic science schools, &c., 1349 (12,199*l.*); (7) for elementary teachers, 1626 (5356*l.*). A comparison of these figures with similar returns obtained five years ago shows that a considerable increase has taken place in the number of scholarships tenable at permanent technical schools.

SCIENTIFIC SERIAL.

American Journal of Science, August.—Experiments on high electrical resistances, by O. N. Rood. The units of resistance employed were prepared by painting peroxide of manganese on strips of blue cobalt glass, then drying and immersing in a rosin wax bath at 150° C. It was found that the surface conduction of units prepared in this way in ordinary weather was practically zero. The aluminium leaf electrometer used in the measurements is also described. It was found possible to build up a set of high resistances with values from 32,000 to 14,000,000 megohms.—Mineralogical notes, by A. J. Moses. A description of mercuric iodide from New South Wales, some new forms on Bergen Hill pectolite and on atacamite crystals from Chili, realgar crystals from Snohomish County, Washington,

vesuvianite from New Mexico, chrysoberyl from New York City, and a pyroxene crystal from the copper mines of Ducktown, Tenn.—On the motion of compressible fluids, by J. W. Davis.—The action of sodium thiosulphate on solutions of metallic salts at high temperatures and pressures, by J. T. Norton, jun. Solutions of various salts which are incompletely precipitated by sodium thiosulphate at the ordinary temperature were heated under pressure in sealed tubes at 120°-140° C. In many cases the reaction became complete, the whole of the metal being precipitated as sulphide or hydroxide. In a few cases the reaction was indeterminate.—Secondary undulations shown by recording tide gauges, by A. W. Duff.—Mathematical notes to rival theories of cosmogony, by O. Fisher.—Studies of Eocene Mammalia in the Marsh collection, Peabody Museum, by J. K. Wortman.—The electromagnetic effects of moving charged spheres, by E. P. Adams. The deflection of a magnetic needle caused by the rotation of two electrically charged spheres was measured, and in opposition to the views recently published by Cremieu, the deflections observed agreed with those calculated theoretically within the limits of experimental error.—The nadir of temperature and allied problems, by J. Dewar.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 20.—On the Behaviour of Oxy-hæmoglobin, Carbonic-oxide-hæmoglobin, Methæmoglobin and certain of their Derivatives, in the Magnetic Field, with a Preliminary Note on the Electrolysis of the Hæmoglobin Compounds, by Arthur Gamgee, M.D., F.R.S., Emeritus Professor of Physiology in the Owens College, Victoria University.

The following are the conclusions to which the author has been led by his experiments:—

(1) The blood-colouring matter, oxy-hæmoglobin, as well as carbonic-oxide hæmoglobin and methæmoglobin, are decidedly diamagnetic bodies.

(2) The iron-containing derivatives hæmatin and acethæmin are powerfully magnetic bodies. The differences in magnetic behaviour between the blood-colouring matter and acethæmin and hæmatin point to the profound transformation which occurs in the hæmoglobin molecule when it is decomposed in the presence of oxygen.

(3) The preliminary study of the electrolysis of oxy-hæmoglobin and CO-hæmoglobin renders it probable that, in the blood-colouring matter, the iron-containing group, on which its physiological properties depend, is (or is contained in) an electro-negative radical; according to analogy, the iron in such a compound would possess diamagnetic and not magnetic properties.

PARIS.

Academy of Sciences, August 12.—M. Fouqué in the chair.—A criterion for the recognition of singular points of the uniform branch of any monogenous function, by M. G. Mittag-Leffler.—On the infinitely small deformation of an elastic ellipsoid submitted to known forces on its boundaries, by MM. Eugène and François Cosserat.—Verification of the relation which exists between the characteristic angle of deformation of metals and the coefficient of restitution of their elasticity, by M. G. Gravaris.—On the colour of the ions, by M. G. Vaillant. The theory of ions applied to the coloration of solutions leads to the following consequences: in completely dissociated solutions containing only one coloured ion, the coloration is independent of the nature of the other ion; if the ionisation is incomplete, the coloration should vary with the concentration and nature of the non-coloured ion; and, finally, the coloration of a solution of any concentration ought to be related to its degree of dissociation by a formula with two moduli, and two only. All these conclusions were confirmed experimentally by a study of solutions of the permanganates of potassium, barium and zinc.—On the value of the molecular heats at the boiling point, by M. de Forcrand.—The action of benzoyl chloride upon trioxymethylene in presence of zinc chloride, by M. Marcel-Desclède.—A method for the prevention of hail, by

M. G. M. Stanoiéwitch. The use of a small captive balloon fitted with a deep-toned electrically-driven bell or siren is suggested as a means of breaking up hail clouds.

NEW SOUTH WALES.

Royal Society, June 5.—Mr. G. H. Knibbs in the chair.—On a new rock allied to nepheline phonolite, from Kosciusko, New South Wales, by F. B. Guthrie, Prof. David, F.R.S., and W. G. Woolnough. The Kosciusko rock is characterised by its large proportion of nepheline which dominates all the other minerals. The nepheline occurs in micro-porphyrific idiomorphic crystals. The soda-augite ægirine is also abundant, and there is a small amount of glassy material in the base through which are scattered delicate acicular crystals and microlites of felspar. A few small amygdulæ may be noticed, not sharply marked off from the surrounding rock; they consist of a shell formed chiefly of analcime enclosing secondary calcite. The specific gravity of the rock varies from 2.43–2.5. The rock differs conspicuously from typical phonolites in the following respects:—(1) low silica percentage; (2) entire absence of phenocrysts of sanidine. It is a felspathoid rock, and although its silica percentage allies it with the basalts, its mineral constitution, chemical composition and low specific gravity link it with the phonolites. So far as the authors are aware, it is unlike any rock that has hitherto been described from any part of the world.—Preliminary notes on the intermediary host of *Filaria immitis*, Leidy, by Mr. Thos. L. Bancroft. *Filaria immitis*, a worm-parasite of the dog, common throughout the world, but more especially in the warmer parts, of from five to ten inches in length, the males being the smaller, is found generally in the right ventricle of the heart and in the pulmonary artery. The so-called embryos, 1/90 in. \times 1/3500 in., are produced in great numbers; the late Dr. Spencer Cobbold taught that an intermediary host was necessary to transmit the parasite from one dog to another. Among others, Grassi, Sonsino and J. Bancroft endeavoured to discover this intermediary host. The dog-flea (*Pulex serraticaps*), the various dog lice, and ticks were examined, but with negative results. The author for thirteen years past had endeavoured to find the intermediary host, examining *Pulex serraticaps*; the common horse-fly, *Stomoxys* sp.; *Culex vigilax*, Skuse—a day-flying mosquito; the intestinal worm parasite of the dog—the *Anchyllostoma* or *Dochmius trigenocephalus*. The possibility of metamorphosis being essential seemed doubtful, the embryo might, it was thought, go through a cold stage for several days in the body of an insect and then develop, after introduction into the body of the dog. A puppy, who ate 110 *Stomoxys* flies gorged with filariated blood, in one month showed after a series of experiments, extending over nearly a year, that such an hypothesis was untenable; and moreover, that the time taken by the young filaria to arrive at sexual maturity was not less than seven months nor more than twelve. After discussing Grassi's discovery of the intermediary host of *Filaria immitis*, viz. the *Anopheles maculipennis*, Meigen, syn. *A. claviger*, Fab., and the statements of a paper by Grassi and Noë on "the propagation of the filariæ of the blood exclusively by means of the puncture of peculiar mosquitoes," the author states we are now able to give an exact account of the life-history of both *Filaria nocturna* and *F. immitis*. The sexually mature worms in man or dog produce embryos, which swim in the blood: the mosquito on biting abstracts some of the embryos, these develop in the mosquito's body, and in about three weeks are capable of entering their final or definite hosts, passing into the puncture made by the mosquito in the skin; they then advance to sexual maturity in the course of about a year. The position in the mosquito's body during the metamorphosis of the embryos distinguishes *F. nocturna* from *F. immitis*, the former being in the thoracic muscles, the latter in the malpighian tubes, at their maximum development; the latter are distinguished as being shorter and thicker. It has been learnt that mosquitoes live for long periods, and not merely a few days as was formerly supposed, and that during their life they bite frequently. In Europe, *Anopheles maculipennis* plays the rôle of host for the malarial parasite, for *F. immitis* and it is believed also for *F. nocturna*; in Australia the house-mosquito, *Culex skusii*, Giles, is host for both *F. nocturna* and *F. immitis*, and probably also for the malarial parasite.

Linnean Society, June 26.—Mr. J. H. Maiden, president, in the chair.—On the occurrence of diatoms and radiolaria in the Rolling Downs Formation (Lower Cretaceous) of Queens-

land, by Prof. David, F.R.S., W. S. Dun and W. H. Rands.—Notes on an aboriginal grave in the Darling River District, N.S.W., by Graham Officer. Certain objects of aboriginal manufacture found over a large area of the western division of New South Wales have hitherto been somewhat of a puzzle to anthropologists, and precise information about them is very difficult to obtain. The objects in question are of two types, one of which has already received consideration from Mr. W. R. Harper in the Society's *Proceedings* for 1898 (p. 420). A second type is described in the present paper, some examples of which were found on an aboriginal grave arranged in a circle about three feet in diameter. The author concludes that the objects of both types had a phallic significance; also that those of the first type were used to mark the graves of men, while those of the second type were placed on the graves of women, possibly also of youths who had not attained their tribal majority.—The "shot-hole" fungi of stone-fruit trees in Australia, by D. McAlpine. The shot-hole effects produced in stone-fruit trees are shown to be due to an effort on the part of the tree to get rid of a parasite or other irritating agent, and the formation of a callus bounding the spot is a special property of the living tissue. At least twenty fungi are known at present to be the cause of "shot-hole," and of these one-half are found in Australia.—Australian Psyllidæ, part ii., by W. W. Froggatt. Twenty-four species referable to three subfamilies are described as new.—On the "onvar" of Malekula, New Hebrides, by Walter R. Harper. The "onvar" or thumb-guard of the Malekulan archer was first mentioned by Captain Cook, and a decorated form of it—probably part of the insignia of a chief—was described by Forster. The more common form is a circular piece of hard though light wood about 3 cm. in thickness, 12 cm. outside diameter at the base, bevelled off to an outside diameter of 7 cm. at the top and pierced by a hole large enough to admit the hand of the wearer, the average diameter of the opening in five specimens being 6.5 cm.

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